

THE BUDGET: IS MANAGEMENT
SLAVE OR MASTER

by

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PREFACE

A new type of business executive has come into existence since World War II. Top military men of today are operating the biggest business in the world: the Department of Defense. For example, the Navy alone has assets of nearly 100 billion dollars, or about as large as the combined assets of the one hundred largest manufacturers in the United States. A naval hero of today might be more readily visualized successfully convincing a Congressional Committee of the need for funds than directing a task force from the bridge of his flagship.

Today our military leaders are fighting the battle of the budget. Admiral Burke, Chief of Naval Operations, admittedly spends 50% of his time on money problems.

This major emphasis on the budget prevents the military businessman from "seeing the forest for the trees." After all, what is a budget? It is nothing more than the financial realization of the plans of an organization for a given period of time. Of and by itself it is not of great importance. The important concept is the budgetary process which is the major tool of management, not management a slave to the budget.

The period since World War II has become known as an era of financial reform in the Federal Government. Because of its size and inherent possibilities for savings, much of the reform movement has centered on the Department of Defense.

During this era of reform, a new breed of technician reached a position of power. The importance of accounting, auditing, and progress

and statistical reporting divorced planning from budgeting. The operators, top military management, are now confronted with a budget specialist who has risen from obscurity to a seat of judgement. In many cases, this new expert is questioning plans when his knowledge of the plans is secondary to his knowledge of the budgetary process.

The purpose of this paper is a plea for the remarriage of planning and budgeting. The need for financial management is not questioned. However, better integration of planning, programming and budgeting is required. More attention must be devoted to developing financial management as a tool of total management. It is believed that this purpose can best be served by the submission of timely and accurate information to the decision makers. This paper will show how the computer can pave the way.

INTRODUCTION

The preparation of a budget in the Department of Defense is a tremendous task. A survey showed that it cost 30 million dollars just to figure out how many billions the military should spend in FY 1955. It was estimated that some 12 million man-hours went into this task. More recent figures are not available but it is safe to say that neither the money nor man-hours has decreased.

The first chapter of this study reviews the budgetary process in the Department of Defense in order to analyze the procedures for areas of improvement.

The second chapter emphasizes the weakness of the present system and points to the use of computers as a solution to the laborious and time-consuming task.

Chapter III discusses the present application of data processing methods within the Department of Defense.

Chapter IV defines the problem and outlines the basic requirements for a systematic approach.

The last chapter proposes a system of management for the Department of Defense in which the computer is the key to the successful integration of planning, programming, and budgeting.

CONCLUSION

The investigation of a family in the treatment of women is a complex task. It is a task that is often misunderstood and is often the subject of criticism. The family is a complex system and the treatment of women is a complex task. The family is a complex system and the treatment of women is a complex task. The family is a complex system and the treatment of women is a complex task.

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CHAPTER I

Present Budgetary Procedures

"The budget and appropriation process is the heart of management and control of the executive branch."

Hoover Commission, 1949

The Budget and Accounting Act of 1921¹ requires the President to submit to the Congress the annual Federal budget. This budget is made up of the annual estimates of all Government agencies. With reference to the agency budgets, the 1921 Act stipulates that ". . . the head of each department shall designate an official thereof as budget officer therefor, who, in each year under his direction and on or before a date fixed by him shall prepare the departmental estimates."

The Budget and Accounting Act of 1921 also established the Bureau of the Budget, placing it in the Treasury Department but under the immediate direction of the President. Under Reorganization Plan of 1939, the Bureau was transferred to the Executive Office of the President.

In preparing the budget, the Bureau of the Budget has authority "to assemble, correlate, revise, reduce, or increase the estimates of the several departments and establishments." Under this authority the Bureau gives the budget its final review before it goes to the President for signature and presentation to Congress.

¹Public Law 13, 67th Congress, 1921.

The Budget and Accounting Procedures Act of 1950² amended the Budget and Accounting Act of 1921 by revising and simplifying budget and accounting procedures.

The Budget Process

The process of developing the Federal budget is one in which there is an interplay of a great many forces. Far-reaching decisions must be made each year regarding matters such as the tax policy of the nation: the debt policy, the size of the budget in relationship to the economy, and the funding level of the many military and civilian programs of the Government.³ The preparation and execution of the Federal Budget for any fiscal year covers about 31 months. This process can be divided into distinct phases or periods: the formulation phase for 19 months and the execution phase for 12 months. The formulation phase is actually two phases: preparation and review.

Budget Formulation Responsibilities

Budgeting engages the time and attention of personnel at all levels in the government from the President of the United States to the commanding officer of an isolated field activity.⁴ Budget formulation begins, therefore at the highest level -- the Presidency. The President provides broad guidance, covering areas of fiscal policy, economic expectations,

²Public Law 784, 81st Congress, 1950.

³Office of the Comptroller, Department of the Navy, The Budget Process in Navy, October 1959, p. IV.

⁴Ibid., pp. 3-1.

levels of defense effort and foreign aid, to the Secretary of Defense through the Bureau of the Budget. Under the Reorganization Act of 1939, the Bureau of the Budget was transferred into the executive office of the President. In addition to the usual financial powers, it was given the function of analyzing administrative and financial implications of proposed legislation, controlling statistics and questionnaires, acting as the administrative-management agency for the President and above all, planning in the terms of the fiscal policy.

In addition to the Bureau of Budget, the President relies on the Council of Economic Advisors, the National Security Council, the Treasury Department and his immediate staff agencies and other groups for advice to assist in the formulation of budget policy. For example, the Council of Economic Advisors is an advisory agency responsible for formulating an immediate and long range program to keep the economy in high gear and on an even keel. Since 1947, the National Security Council (NSC) has had statutory responsibility for advising the President on the integration of domestic, foreign, and military policies. The NSC since 1953, has been made up of the President, the Vice-President, the Secretaries of State and Defense, the Director of the Office of Defense Mobilization, the Director of the Foreign Operations Administration, and such others as the President may designate from time to time. The Director of the Bureau of the Budget customarily attends NSC meetings. One of the early duties of the National Security Council was to advise the President on the size of the military budget, after reviewing in broad outline the programs of the Department of Defense, foreign aid programs, and the state of the civilian economy.⁵

⁵Jesse Burkhead, Government Budgeting (John Wiley and Sons, New York, 1956), p. 95.

These agencies develop assumptions as to economic and international conditions and also forecast expected revenues which will govern the preparation of the budget.

The Secretary of Defense, in turn, provides military and fiscal guidance to the Army, Navy, and Air Force. Usually, the Joint Chiefs of Staff will advise the Secretary in regard to force structures, strategic and logistic plans, assignment of missions and responsibilities, material and personnel requirements, and training and operations for the three services. Similarly, the call for estimates and the policy guidance, amplified by conditions at various levels, is funneled downward to major commands and operating elements of the armed forces.

Budget Preparation

The next step in the budget process is the preparation phase of the departments and agencies as they commence compiling detailed budget estimates based on the formulation guidelines from higher authority. Responsible personnel in the Army, Navy, and Air Force were visited in order to determine the various methods used by each service to compile the budget submitted to the Secretary of Defense for consolidation. Questions were also asked to determine what extent, if any, automatic data processing was used in preparation of the budget or in any phase of financial management. This subject will be amplified in later paragraphs.

Essentially, all three services utilize the same approach in preparing their budget estimates. Therefore the Navy system will be briefly described as typical.⁶

⁶See The Budget Process in Navy for greater detail, pp. 3-2 to 3-14.

Based on the broad guidance received from the Secretary of Defense, the first step taken in the Navy and Marine Corps is the development of the annual program objectives. This is the responsibility of the Chief of Naval Operations and the Commandant of the Marine Corps, working under the direction of the Secretary.

The draft of the program objectives is submitted to the Office of the Comptroller for the preparation of a "rough estimate," by appropriation and budget category, of what it would cost to fund the objectives.

The proposed draft, together with the estimated cost, is then submitted to the CNO Advisory Board for review and adjustment. The Board reviews each program carefully, and resolves controversial items. The revised draft is reviewed by the Chief of Naval Operations and the final step is review and approval by the Secretary of the Navy.

Upon receipt of the program objectives, the naval bureaus commence preparation of detailed budget estimates by appropriation. The bureaus have developed varying techniques and systems but the patterns of budgeting are quite similar. It should be noted, however, that no one method exists for formulating budget estimates.

Most budget estimates originate at the bureau level in Washington. The individual bureaus generally seek field estimates in the areas of maintenance of facilities and military construction programs. Other areas such as major procurement, research and development, can best be determined by central planning and the development of estimates accomplished at bureau level.

The basic responsibility for development and preparation of initial budget estimates usually rests with the planning and program personnel

within the bureau. For example, in the Bureau of Naval Weapons, the Assistant Chief for Program Management is responsible for the budget estimates. The financial section, headed by the comptroller, serves in a staff capacity and establishes preparation and review schedules, generates data to support the budget, and assists in justification before higher review levels.

In preparing budget requirements, one finds many ramifications to each program. There are many variables to be considered in each program as well as relationship or dependence on other programs. Most serious of all is the determination of a priority or relative importance of all a bureau's programs. Considering these programs in relation with other bureaus and finally all the Navy programs in relation to the other services, one realizes the need for systematic approach.

Budget Review

The bureau budget is finally reviewed and approved by the Chief of the Bureau after all program issues have been resolved among the various program managers. The budget is then submitted to the office of the Comptroller of the Navy. Each bureau's budget estimates must now withstand critical examination by various review authorities, each of which considers the budget from a somewhat different viewpoint and with a somewhat different objective in mind. These reviews are briefly summarized in order to indicate the magnitude of the decisions that must be made at each higher level.

The primary objective at the Secretary of the Navy level is to establish the amount of funds required to carry out the prescribed mission as set forth in the program objectives. Usually the amount will be more

than can be expected to be appropriated. The objective then is to develop the best possible naval program within the imposed fund ceiling.

At the Secretary of Defense level, the objective is the same but on a broader scale: i.e., to establish the funds required to provide the best possible total defense program. The total dollar requirement determined by the most qualified military minds again exceeds the funds available. The decision must be made which requirements of the three military departments are most essential to the execution of their assigned missions.

The total budget for the government is the objective at the Presidential level. The requirements of all departments and agencies must be integrated into what the President considers to be a sound Federal budget. Decisions at this level are influenced not only by the national fiscal policy, the economic situation, but the need for a balanced budget and the political atmosphere depending on nearness of elections.

When the President has made his final decisions on the funds required to carry out the programs of the entire Federal government, the budget is printed and forwarded to the Congress. As provided by law, this must be done within the first fifteen days of each regular session of the Congress.

Congressional review of the budget takes approximately six months. The Congressional objective is to pass the various appropriation acts by 1 July, the beginning of the fiscal year. Congress must determine the amount of funds required to carry out authorized programs in the most efficient and economical manner. The review, which is conducted largely through formal hearings, is exhaustive in nature and covers both the broad aspects of program requirements, relative priorities, and program balance

as well as the more detailed aspects of fund requirements. Within these hearings, a spectator is likely to hear discussion concerning the adequacy of defense forces for general and limited warfare as well as concern over the use of mess attendants to serve meals to midshipmen at the Naval Academy.

Budget Execution⁷

Budget execution is a complex process, involving numerous limitations and controls of a legal funding and administrative nature. These limitations and controls stem from Congress as well as from a number of Government agencies including the Office of the Secretary of Defense, the Bureau of the Budget, the Treasury Department, and the General Accounting Office, each of which has specific responsibilities in connection with supervising the expenditure of public funds.

The reviews and controls inherent in budget execution are carried out largely through the apportionment process, the allocation process, and the OSD Financial Plan. These will be discussed in more detail later as actual methods of the defense agencies are reviewed.

⁷See The Budget Process in Navy, pp. 6-1 to 6-16.

CHAPTER II

Criticism of Present System

"All goddam auditors ought to be in the bottom of hell!" ✓

Attributed to General George S. Patton

Budgeting should be a tool of management. Budgeting is more than merely a means to obtain funds, it is a means to an end: an important device for both program development and program control. However the present annual military budget hinders rather than helps well-balanced program decision making:⁸

- (1) The timing process. Fundamental decisions on which estimates are based are required from 15 to 30 months before period in which they apply.
- (2) The plan becomes solidified in the detail of budgetary computations, reducing flexibility and forcing the defense of initial errors.
- (3) In the review process, each level is more concerned with preparing and presenting a "case" before the next higher echelon than it is in reaching the best possible decisions.
- (4) The increasing technicality of budgeting tends to center the process, and attendant decisions upon technically qualified persons-accountants and comptrollers-rather than upon persons qualified and responsible for broad policy and program planning.
- (5) The detail and itemization attendant upon the present structure of the budget focus attention upon the less important areas of decisions and obscure the more important.

⁸Frederick C. Mosher, Program Budgeting: Theory and Practical (New York: American Book-Stratford Press, Inc., 1954), pp. 231-232.

- (6) The distinction between capital and current expenditures, as it has been applied, tends to obscure true program costs and fails to provide a useful classification of expenses by character.

The budget and its attendant processes should provide adequate internal management and promote efficiency within the military. Presently there are fairly basic shortcomings:⁹

- (1) The budget time-table forces pre-planning at a stage too early for a managerial purpose. Operational planning is neglected or is conducted on a crash basis.
- (2) The classification on the basis of cost categories discourages the merging of budget with program management, as does the technical skill required for budgeting.
- (3) The budgets and the allotments to users cover only a fraction of the resources actually required and consumed at the user level.
- (4) Detailed prescriptions and controls of both a fiscal and non-fiscal nature, imposed by higher authority, severely limit the actual scope of initiative and decision at lower levels; the system inhibits a true delegation of authority and responsibility.
- (5) Stress on accounting, on legality and propriety in fiscal transactions, on obligations and expenditures, and on detailed record keeping and reporting, have reduced the budget system's value to management as a device for planning and controlling operations.
- (6) Except in scattered and largely extra-budgetary instances, there is little mechanism or motivation for measuring work and costs in related fashion.
- (7) Without the mechanics of performance evaluation, there is little budgetary "stake" in doing an efficient job: there is likewise little basis for relating personnel administration with performance and efficiency: commanders by and large have limited acquaintance or concern with budgetary administration.

⁹Ibid., pp. 232-233.

General Maxwell D. Taylor (Ret) feels that many service conflicts could be adjusted through compromise but for the knowledge of the fixed size of the defense budget. The fact that there is a ceiling around \$40 billion is a reminder to each of the Chiefs of Staff that all military programs are competitors for a fixed number of dollars. The fixed defense budget has become the prime cause of the service rivalry which is undermining national confidence in our military programs.

United States strategy has become a more or less incidental by-product of the administrative processes of the defense budget. Once each service has received budget guidelines, it then proceeds to develop its own service budget. Although there is tremendous amount of discussion at all levels of review, there doesn't appear to be any evidence that the ultimate outcome is greatly influenced. As a consequence, our military strategy today is a result of administrative and budgetary happenstance rather than analytical appraisal.¹⁰

It is not surprising that the National Security Council has grown complex since the nation's security is more complex than it was in 1947. As an indication, the Defense Department alone now spends more than the entire Federal Government spent in that year. When bureaucracies get big and complicated they tend to get exceedingly cumbersome as well.

Considering the Pentagon, the instrument of our security, it's no wonder the N.S.C. is also an unwieldy machine. It is easy to joke about this bureaucratic marvel that is the Defense Department. But it is plainly no joke when inter-service warfare is carried to the point of wasting the

¹⁰ Maxwell D. Taylor, The Uncertain Trumpet (New York: Harper and Brothers, 1959), p. 67.

people's money and delaying technological progress. It is no joke when secrecy regulations are made so severe as to prevent scientific communication. Or when chains of command are choked with supernumeraries. Or when the disease of committee-itis hopelessly prolongs if it does not paralyze the reaching of decisions.

The difficulties of reforming the Pentagon are apparent. But it is certainly idle to hope for improvement, in these circumstances, simply by putting more money into the Pentagon. That is the one great demand of those who, with more feeling for political rhetoric than for fact, contend that this Administration is placing budget-balancing above national security.

Unless the Pentagon could be given a thorough shake-out first, more money would in all probability worsen the chaos. And if the Pentagon could be shaken out, and rational allocation of resources established, then it is quite possible that less money would suffice.

In that situation the formulation of broad defense policy in the National Security Council might cease to be an unwieldy procedure. The essentials of security policy are relatively simple, or would be if they were not buried in bureaucracy and obscured by special interests in the Pentagon and elsewhere in Government.

Somehow the issues and procedures of defense must be simplified and brought into clearer focus.¹¹

Serious attention should be paid to existing waste of manpower and money. Admiral Hyman Rickover, whose atomic submarine is one of our most valuable military assets, recently complained that an overstaffed Pentagon

¹¹The Wall Street Journal, March 7, 1960, p. 8.

was getting in the way of himself and his colleagues in their attempt to keep the U. S. ahead in this field.¹²

One can assume two different viewpoints from the previous criticisms of the defense budget. We must finance our requirements regardless of cost, or we should "increase" the defense budget by better management of the funds provided. Logically the path to follow is to increase the efficiency of our present management. The past few years of financial reform have concentrated on the budget process. Concentration on the technical aspects of budgeting tends to make management slave to the budget, rather than management using budgeting as a tool of control. It is most important that increased attention be given to better integration of planning, programming, and budgeting, and increased utilization of the budget in day-to-day management at all levels. In this period of ceiling budgets and increasing costs for military programs, it is essential that efficient management be used to its full potential.

The means to accomplish more efficient management are available today. They are being used in many phases of the Department of Defense as well as in industry. What remains to be done is standardize a system so that it is in universal use. Without universal standards, there can be no appraisal of efficiency. Analysis of what is being done to what should have been done requires a non-partial, non-emotional attitude. This statement suggests that the analysis should be done by machine, for man is human and therefore subject to emotion. The question arises -- more or less humorously -- as to why man cannot be replaced by a machine. Man has

¹²The Wall Street Journal, February 24, 1960, p. 9.

limited knowledge, a limited memory, and a limited ability to examine the consequences of decisions: therefore he makes mistakes. One electronic brain contains a library of accumulated knowledge, a vast memory, and the ability to perform calculations of all types at lightning speed. Furthermore it practically never makes mistakes -- and, when it does, usually admits it. The fact remains, however, that man occupies a fundamental position which can never be usurped by computing machines even when aided and abetted by mathematics, engineering, operations research, or any other specialized brands of knowledge. These marvels of modern ingenuity will assume an essential role as guides to decision-making.

Formal analytic systems that encompass many alternative actions using the contributions of many scientific disciplines are being used more everyday. A system analysis can present the estimated pros and cons of an enormous number of possibilities and make possible an explicit choice between them. With improved programming techniques and machines, therefore, the ability to compute the consequence of thousands of alternatives has progressed by leaps and bounds. However, it will be argued, the results of massive computations depend ultimately upon the skill, intelligence, and integrity of men who feed in the raw data. The final result can be no better than the choice of alternatives or the criteria used for selection. In rebuttal, it is pointed out that establishment of universal standards of criteria will produce only the cold, calculating results from the non-emotional machine which has no special interests or other motives. A system analysis can stimulate an explicit look at a wider range of alternatives, point to the critical information, and provide a check on the results of less formal methods.

CHAPTER III

Data Processing Today

"These machines are like grand pianos -- you can become a virtuoso, or you can play Chopsticks all your life."

Attributed to a computer user.

Data-processing has created a new language of abbreviated titles which tend to be used interchangeably and loosely thus creating confusion as to what is actually being done. A brief definition of data-processing methods will provide a common understanding of the meaning used within this paper.

MDP represents Manual Data Processing. The use of clerical help needs little explanation. It is expensive, time-consuming, and tends to produce errors in recording, sorting, computing and printing.

EAMDP stands for Electrical Accounting Machine Data Processing. This system uses electrically operated equipment, such as adding machines, desk calculators, bookkeeping machines and other electric accounting machines to reduce clerical effort. Although EAMDP improves the accuracy of report preparation, it still requires a considerable amount of manual effort to read, sort and keystroke the data in the system.

PCDP, Punched Card Data Processing, which uses punched card equipment to transcribe, sort, compute, and print data, reduces much of the manual effort associated with the preceding systems. This is especially true when the data is used repetitively. Some manual effort is still

required. Data must be transcribed to card form and these cards must be handled for each step of the operations.

EDP or Electronic Data Processing eliminates the manual handling of data, from step to step. Once the data are received, the electronic data processing system will store, operate on, and record data without intermediate use of punched cards. It can store data internally and can locate and control the access to this stored data. At a minimum, it can store internally instructions for processing data. EDP systems do not eliminate the cumbersome manual task of preparing and transcribing the source data which is used as input for the system.

IDP or Integrated Data Processing is the technique of recording data at the point of origin in a form suitable for subsequent processing without human copying. It mechanizes the duplication of repetitive data, thereby eliminating the manual effort used to produce source data for input to the systems discussed above.

ADPS, or Automatic Data Processing System, uses a minimum of manual operations in processing data.

Several systems have been developed by federal government agencies and private industry and many studies have been made investigating the feasibility of using automatic data processing in budget formulation and execution. Some of these are discussed in this chapter. From the number and magnitude of the programs in use and under study it is obvious that there has been a great deal of progress in the field of management by computer. However, the lack of coordination, within the military, is wasting millions of dollars because of each service duplicating studies either already made or completed. Within the Navy, for example, each technical bureau is devising

its own system of using computers despite the existence of a coordinating committee headed by the office of the Comptroller. While the efforts to improve the management process by using advanced techniques is praiseworthy, the lack of overall coordination justifies the criticism of our overstuffed Pentagon. This lack of uniformity in the early stages of study will compound the difficulty of coordination in the future.

Applications in the Air Force

"The Trim System" of the U. S. Air Force¹³ is a generalized computational system for solving a wide variety of Air Force problems in the class of program and requirements computations. For example:

Long Range Force Structure Costing -- Costs of long range force structure projections by budget appropriation, cost element and weapon system are computed as required for use by top level planners in evaluating the dollar impact of force level and composition decisions.

Budget Estimates Based on Hq USAF Program Documents -- Procedures will be developed where feasible, for estimating those elements of the budget that can be directly related to the Hq USAF prepared program documents.

Other applications include:

- USAF Program-Aircraft and Flying Hours
- USAF War Plan Computations
- Aircraft Age Distribution Projection
- Resource Requirements Computations
- Military Assistance Program Aircraft and Flying Hours
- Aircraft Requirements
- Computation of Average Program Rates of Utilization
- Model for Simulation of Military Personnel Force Structures
- Computation of Typical Units
- Mathematical and Technical Assistance to the Air Staff

¹³Trim II, The Headquarters USAF's Generalized Computation System, AFAMA-3.

Air Battle Analysis
Flight Plan Analysis
Medical Reporting

Financial Plan (O and M) -- Machine preparation of Budget review list, command status and management reports deriving from the annual financial plan (O and M) and its quarterly revisions.

Annual Call for Budget Estimates -- At present, the primary effort in this area is in the Military Constructions Appropriation. It contains program, authorization, apportionment and dollar data by line item. Future plans call for the extension of mechanization to other appropriations.

The Air Force Material Command Financial Plan (O and M) is particularly significant because it illustrates the use of EDP in the budget process that has been used successfully since 1955.

Prior to the present system, each item for which a requirement was suspected was clerically analyzed on an annual basis to determine the extent of the requirement. Because of human mental limitations, and the need for review at least annually, the total number of decision factors which could be considered was 75 or less. From this the clerk computed the number of pieces of the item required and prepared the budget for the next year. The number of line items analyzed, as described, totaled nearly 200,000. It is evident that a great deal of work by a large force was required to produce a budget based on meager information. The quality was further deteriorated by changes to basic programs during the year. Because of time requirements, it was impractical to attempt revision except for expensive items. Stocks were either exhausted prior to replenishment or surpluses built up due to under or over estimating by the human element.

Each of the depots is now equipped with an electronic computer which is capable of handling 2,000 bits of information per item. Program-wide computations are reported on a quarterly basis, or more often if required. Management at the Headquarters level now has timely and accurate information frequently as needed. The system has effected a great saving in man-hours for budget preparation: but, more important, it has insured timely formulation of a high quality budget, reduced overstockage, and increased parts and equipment availability.

This pioneering advance in the use of electronic data-processing equipment and transceiver networks to fill the supply line has saved \$400 million in facilities construction at overseas depots alone in the last few years and has cut the logistics depot personnel requirements of some 62,000 spaces since 1955.

Applications in the Navy

In May 1959, the Navy Comptroller established a committee to review the budgeting processes applicable to Military Personnel, Navy and the Shipbuilding Conversion, Navy appropriations and to determine the extent of the mechanization now existing, the degree to which EDP capabilities could be applied to those areas and the feasibility of expanding the applications of EDP capabilities in the same areas at NAVCOMPT level based on source data produced at the Bureau level.

The progress of the committee to date has been to review Bureau programs. Definite conclusions and recommendations have not yet been submitted to higher authority.

The writer interviewed personnel at the bureau level in order to determine what methods of data-processing are being used or planned.

Bureau of Ships

Dr. Paul Anderson, Electronic Computer Division, has done a great deal of study in this field and has devised a system for managing work and resources in connection with computer. This is essentially an EDP system which will be capable of performing all the functions listed below in outline form, not as separate applications but as integrated, connected, compatible segments of a single unified data processing system.

- | | | |
|---|---|---------------------------------|
| 1. Plan |) | |
| 2. Program |) | |
| 3. Schedule |) | Mission and functional programs |
| 4. Progress |) | |
| 5. Review |) | |
| 6. Formulate |) | |
| 7. Execute |) | Budget |
| 8. Review |) | |
| 9. Control inventory |) | |
| 10. Compute requirements |) | Material Program |
| 11. Distribute material |) | |
| 12. Control Procurement | | |
| 13. Perform necessary accounting | | |
| 14. Audit itself | | |
| 15. Solve management problems with PERT (Program Evaluation Review Technique), LOB (Line of Balance) Technique, Linear Programming, simulations and other operations research techniques. | | |

This plan relegates budgeting to its proper place in the overall process of management. Budget is an information system providing top personnel with the status of funds. The information system of funds will formulate, execute, and review the budget; perform accounting functions and produce the necessary accounting reports, and create the required audit trails.

Review as used here does not mean budget review by higher authority during formulation but rather the comparison of the actual expenditure against planned expenditure during the execution phase.

Bureau of Naval Weapons

Bu Weps is brand new and bigger than any of its counterparts. Combining the Bureau of Aeronautics and the Bureau of Ordnance, the new bureau will offer a single focal point for virtually all of the Navy's hardware except ships.

With the advantage of reorganization, Bu Weps has established relationships in the Data-Processing Program. The Director for Program Planning is responsible for development of an integrated data-processing system and for insuring that systems developed by the other elements of the bureau are compatible with the integrated system.

In other words, each element of the bureau is responsible to devise individual data-processing systems to satisfy its individual needs. Technical advice relative to application and capabilities of equipments, analysis, and programming, procurement, and operation and maintenance is the responsibility of the Computer Division under the Inspector General and Assistant Chief for Administration.

Based on the above policy, the Comptroller is planning a five-year program. The first year program is essentially one to mechanize fund availability control and improve internal controls in processing. This system is essentially one of punched card equipment and automatic bookkeeping devices. The overall plan is to proceed slowly and develop objectives for new systems rather than purchase equipment and then determine how to use it.

Both the Bureau of Aeronautics and the Bureau of Ordnance were using electronic equipment prior to the merger. Cdr. J. M. Vaughn, while in BuAer, developed a system for aircraft procurement as well as operation and maintenance. This system includes plans, research and development, operations,

facilities, material, manpower, and financial management. A similar system has been used by the Air Force Air Material Command since 1955 for solving the same logistical problem but has not yet been implemented in the Navy.

BuOrd was in the process of programming a recently acquired computer to provide accurate and timely ammunition stock reports from its many far-flung activities. This plan is still in process.

Another study is being conducted for the feasibility of using the computer in determining material reserves; i.e., the quantities of items which should be procured and stocked in advance of a future D-day. These computations are now done manually and entered on form DD764 for all ammunition, guns, missiles, torpedoes, mines and ordnance equipment. A large number of clerks constantly are performing arithmetic operations on large masses of data because of the many changes in requirements due to budget changes, revised war plans, or peacetime programs.

The Air Force has been using UNIVAC for this application for many years.¹⁴

Special Projects

Although nominally under the Bureau of Weapons, SP is, in effect, a separate entity for the management of the POLARIS submarine /missile weapon.

SP utilizes a management system design called PERT (Program Evaluation Review Technique) for aid in solving problems. The system was devised by an organization called Systems Development Corporation. Two basic concepts are the foundation for program evaluation. First, a flow plan, or statement of activities or events necessary to achieve an objective, is

¹⁴The Use of an Electronic Computer by United States Air Force in Programming and Budgeting, APA 3-27, November 1953.

traced from start to end-product or result. Elapsed time estimates are obtained from the competent personnel involved. The interdependence of the multitudinous activities of the vast program can then be programmed to insure that each unit has time to perform actively, all resources are applied, and performance meet specifications. Management by exception is the theory and since trouble areas are revealed early in the evaluation, various alternatives considering time, cost, and performance can be reviewed. By using computers, programs can be revised to the optimum degree in hours.

Bureau of Supplies and Accounts

The Supply Corps has been using computers for a number of years. The computer is an essential cog in their Supply Demand Control Point system which unites the efforts of technical, engineering, supply and business personnel in one location for a coordinated operation. These 14 offices determine -- for the entire Navy -- which items to buy, how much to buy, when to buy and what sort of distribution will be needed to meet demand.

BuSanda is presently working on a plan to bring about greater efficiency in its operations. An electronic data-processing system is near implementation to provide better ways of obtaining information for making correct supply decisions, more accurate methods of bringing shipboard supplies into balance and computing and applying readiness and cost factors in calculating stock levels, procurement schedules, distribution of stocks and disposal of surplus supplies.

The proposed system will have three major applications: transportation, supply management, and financial inventory control reports.

The new system will have many advantages over the present system, such as: synchronizing diverse programs, insuring timely completion and

reliability of output, providing for management by exception, maintaining files, interrogating facilities, and having flexibility for meeting changing and expanding workloads. Basically the method of supply management will be as follows:

1. Forms will be received in EDPS, key punched, key verified and transcribed to magnetic tape.
2. The computer will maintain the log. All data will be printed.
3. A complete audit and check will be made by the computer. Where possible errors will be corrected by the computer.
4. Reports will be prepared upon receipt of data by activity, ledger account, or appropriation. System wide data will be prepared upon receipt of the last activity or report.
5. All data will be on magnetic tape and will enter the system only once. Files are updated on receipt of data and information for reports will be available readily.

Applications in the Army

The first applications of electronic computers to business-type operations in the Army were in the field of logistics with the installation of computers in the Engineer Supply Control offices. Studies for these and other supply applications had been originated in 1954 and earlier. The Army now has computers installed for personnel accounting as well as logistics. Because of the success in these areas, the Army in 1958 investigated the feasibility of electronics for management.¹⁵ The studies led to a development of a new system for automatic data processing at Class I installations which not only results in savings in personnel and money, but will provide top level management with timely information of increased accuracy. The cost of

¹⁵John S. Cole, "Electronics for Management," The Armed Forces Comptroller, III (June, 1958), 1-8.

processing paperwork prior to this installation was \$1,200,000 per year for strictly "pencil pushing" type of work and did not include supervision or review and analysis. The operation of the automatic equipment costs between \$100,000 and \$300,000, including the rental of equipment, pay for operating personnel, and necessary supplies.

Army Ordnance Corps

The Ordnance Command Management System is a single uniform structure which provides for the identification, accumulation, and communication of executive management intelligence within the framework of the Ordnance Corps.¹⁶

This system is based on the concept that fundamental to the data identification, accumulation, and communication processes is one common classification of the things about which data are needed and the prescription of the standard terms in which these data are to be expressed. The structure classifies the things about which data are needed and prescribes the terms in which they are to be expressed in executing the specified procedures.

The objectives of the account and data structures are to:

- (1) Identify the defined levels at which work and resources (financial, human, and physical) are to be identified, accumulated, and communicated in executing the procedures and processes between top management (Chief of Ordnance) and the field commanders.
- (2) Identify the defined terms in which work and resources (financial, human, and physical) data are to be expressed in executing top management procedures and processes Corps-wide.
- (3) Provide the means for identifying the work and resources of the Corps with the activity, installation, and weapon system management responsibilities of the Ordnance Corps.

¹⁶Army Ordnance Corps, Ordnance Command Management System: Ordnance Management Structure, ORDM 1-5 (Washington: Office of the Chief of Ordnance, 1959), p. 1.

- (4) Provide a basis for field level subidentification of the levels of interinstallation work and resources data identification, accumulation, and communication.
- (5) Provide standard numerical and alphabetical shorthand codes for mechanized data processing purposes.

The four processes of the Ordnance Command Management System that are referred to are:¹⁷

- (1) Work and Resources Planning. The process that embodies and integrates planning, programming, budgeting, and manpower estimating.
- (2) Work and Resources Authorization. The process that embodies and integrates work authorization, funding, financing, and manpower allocation.
- (3) Work and Resources Accounting. The process that embodies and integrates work accounting, manpower accounting, and financial and fiscal accounting.
- (4) Work and Resources Reporting and Appraisal. The process that embodies and integrates the reporting on, and appraisal of work performance, manpower utilization, and financial resources utilization and application.

Specific procedures are prescribed for preparing and processing both general-purpose and tailor-made activity operating schedules and their derivative work ordering instruments. There are activity operating schedules covering all the areas in which, not only the Army, but the entire Defense Department is engaged. These schedules are identified as follows:

- (1) Operation and Maintenance
- (2) Research and Development
- (3) Major Item Procurement

¹⁷Army Ordnance Corps, Ordnance Command Management System: Operating and Supporting Schedules, ORDM 1-6 (Washington: Office of the Chief of Ordnance, 1959), p. 2-3.

- (4) Industrial Mobilization
- (5) Depot Maintenance
- (6) Program Status Report
- (7) Work Authorization
- (8) Ammunition Program Status Report
- (9) Army Stock Fund
- (10) Work Order
- (11) Project Order
- (12) Army Industrial Fund Order

All of the required information has been coded for machine processing purposes in order to provide executive management with a meaningful combination of discrete pieces of raw information that conveys facts enabling the rendering of decisions with respect to work and/or its related human, physical, and financial resources.

Applications in Private Industry

"Computers are no strangers in business today -- but the new industrial revolution they herald has hardly begun. Their real potential has been snagged in false starts and mistakes in use -- but they're on their way."¹⁸

Computers for business applications fall roughly into three areas: clerical work, decision making, and policy determination. So far, the emphasis has gone to the first, since management has traditionally analyzed its communications in terms of countable clerks and pieces of paper handled. One example of the clerical aspect is the handling of a payroll for 10,000 individuals.

¹⁸A Business Week Special Report on Computers, Business Week, June 21, 1958, p. 3.

Computers are making inventory decisions in seconds which formerly took as long as a week. Into a computer system are fed the estimated shipments for a year, an inventory of the 40,000 parts used, with their vendors, and the minimum amount required on hand under varying conditions, allowing for production lead time. The information is regularly updated by feeding in the amount of material consumed, and changes in order rates. This provides an accurate perpetual inventory of what's on hand and what's needed.

When any one of the 40,000 items reaches its predetermined minimum, the computer automatically prints out an order for the ideal amount, and if delivery doesn't come up before the cushion is used up, the computer will pop out an expedite order. By maintaining optimum levels, it cuts the former costs of maintaining inventory by a solid 20%.

The question of policy determination is more uncertain. The ability of the machines to deliver more information faster to help management chart its moves is unquestioned. The one thing the computer is doing so far in this area is forcing managements to a reappraisal of what information they really need.

There is some confusion and complaint about the computers. Probably in no area of management has there been so much self-deception as in the early computer surge. This is partly because, in many cases, possession of a computer became a matter of prestige. It is partly because early uses have run to narrow clerical applications.

First a company decided it wanted a computer-- then it looked for a reason. Staff men -- or brass-- anxious to get their hands on the new glamor tool often inadvertently underestimated costs. And the figures they did arrive at, they most often justified in terms of "savings by reduction

of clerical personnel." Rarely have enough clerks been displaced to cover even the low estimates -- much less the real costs.

These false starts and mistakes in use have created disillusionment because early results have fallen short of the rosy dreams in which the computers came wrapped. Yet it is inevitable that computers are the instruments of a new industrial revolution.

General Electric started computer history in 1954 at Louisville and since has become the most computerized company in the world: 11 large scale and 32 mediums operating in 1958, and three big ones and 33 mediums on order.

The basic data not only provides weekly paychecks, but also supplies complete accounting on labor distribution, and precise labor cost on each item. As a side dividend, it kicks out records for social security reporting. With supplemental information on material and overhead, it develops a complete bookkeeping system on job costs, automatic project billing, and a responsibility reporting system which provides to each of a half-dozen executive levels a summary report of the immediate subordinate level.

Another application at GE's major appliance division is budgeting.¹⁹ This division prepares its budgets on a computer which generates monthly, quarterly and annual budgets and revisions thereto. The computer has been programmed to:

- (1) Provide in advance the budgeted results of sales and production budgets.

¹⁹Paul H. Anderson, "Budgeting with an Electronic Computer," The Armed Forces Comptroller, III (June, 1958), p. 37.

- (2) Indicate the budgeted net income from sales for various sales and production model mixes.
- (3) Determine model selling prices required to achieve a predetermined net income from sales for a fixed production level.
- (4) Determine model mix and production level to achieve a predetermined net income from sales at predetermined prices.
- (5) Determine in advance the net income from sales resulting from proposed changes in sales or production levels.
- (6) Provide detailed operating budgets down to the operation supervisor's level.

This computer has been programmed to calculate the budgeted net income from sales for any prescribed combination of sales volume, production volume, selling price, and price allowances. Since a single department might have over 37,000 combination of these factors, it is obvious that without electronic data-processing it would not be possible to compute the budgeted net income for every combination. The budgets prepared by computer will be more timely and realistic than they have been in the past because the computer can prepare budgets needed for pre-analysis of the impact on profit from alternate combinations of recent facts, management judgment, and actions of competitors.

Another example of budgeting by computer is at the Georgia Division, Lockheed Aircraft Corporation.²⁰ This division utilizes the computer to prepare the labor budget. No new theory or methods are used in calculating quarterly forecasts by means of computer. The method is essentially the same as that used previously by the labor analysts. However the following advantages resulted:

²⁰Ibid., p. 37.

- (1) The budget was released in one-half the time. (Three weeks old rather than six weeks).
- (2) The cost of preparation was one-half of the cost of manual preparation.
- (3) The budget was more accurate.

Conclusion

A lot of budget datum both in industry and the military is recorded on punch cards and processed by electrical accounting machines (EAM) and by means of electronic data-processing equipment (EPD). There is also some notable progress in the use of integrated data-processing, mainly in the field of budget execution where inventory and payroll type operations are readily mechanized. Of the various systems used in the military, the lack of uniformity of application is noticeably apparent. Actually, as in industry, the real potential of the computers has not been utilized.

CHAPTER IV

The Problem Defined

"When the history of our age is written, I think it will record three profoundly important technological developments;

Nuclear energy, which tremendously increases the amount of energy available to do the world's work;

Automation, which greatly increases man's ability to use tools;

And computers, which multiply man's ability to do mental work.

Some of our engineers believe that of these three, the computer will bring the greatest benefit to man."

Ralph J. Cordiner, Chairman,
General Electric Co.

The previous chapters have dealt with the managerial problem in the Department of Defense. It is essential to a study of solution of the problems of management that there be set forth an outline of the various types of activities which must be managed and to recognize the characteristics, problems, and motivations of those who must be assigned responsibility for the actual management of these activities.

No single managerial task approaches in scope and complexity that involved in administering the Department of Defense. The responsibilities and problems of the Department of Defense whether considered in terms of manpower, material, money, world-wide area of operations, diversity of activities, technical problems or any other similar measures, are unique

and dwarf by comparison any similar aspects that would be encountered in managing the largest and complex of the largest industrial corporations.

Our national security policy is the necessity of maintaining substantial military forces at an adequate degree of readiness for an indefinite period of time. This must be done with maximum efficiency and economy. The Defense Establishment must be so organized and managed as to achieve maximum efficiency and economy. However, while recognized business methods may be applied directly to many operations, others must be adapted in varying degrees to meet the diverse activities and unique needs of the Department. The problem can best be illustrated by outlining the activities in general classes and determining basic requirements for an effective system of management. These activities may be divided into three broad classes: administration, financing, and accounting.

1. Military and administrative

- a. Combat and combat support units capable of immediate deployment without loss of operational effectiveness. (Functions are unique and have no counterpart in business.)
- b. Operation and maintenance of posts, stations, and air bases, etc. (Modified commercial practices are applicable.)
- c. Operation and maintenance of supply and distribution systems. (Modified commercial practices are applicable.)
- d. Administrative functions of departmental headquarters, procurement and inspection offices, etc. (Commercial practices are generally applicable.)
- e. Maintenance of production facilities. (Commercial practices are generally applicable.)

2. Inventories -- procurement and management of inventories and supplies, which fall into two major groupings:
 - a. Capital-type items major equipment including mobilization reserves, generally requiring long production lead time, for which the determination of requirements and assignment of use are not controllable at the operating level. Acquisition is for delivery and use only in future years and therefore the costs of acquisition have not relation to costs incurred in operation of present forces.

Examples of such capital-type items are aircraft, ships, tanks, artillery, combat vehicles, machine tools and industrial equipment, etc. (Most of these items have no civilian counterparts.)
 - b. Consumable material and supplies-covers all items utilized in operation and maintenance of forces, plant and equipment, such as clothing, petroleum products, medical supplies, spare parts, maintenance supplies, general supplies, etc. (These are comparable to commercial items and their consumption is controllable at operating levels.)
3. Industrial and commercial type activities -- the parallel to the proven techniques of business administration and management is appropriate.
 - a. Production and overhaul in arsenals, shipyards, aircraft modification and repair facilities.
 - b. Support and service activities, such as sea and air transportation, printing and laundries.
 - c. Laboratories and test facilities.
4. Construction or military public works -- the provision of additional or modernized facilities to maintain military effectiveness. (The nature of the facilities may be different from commercial experience but the managerial techniques are similar.)
5. Research and development -- includes supervision of extensive research work in government and private facilities under contract. (Similar to research programs of large corporations.)

6. Medical care -- (Similar to practices of private hospitals.)

These are the activities and efforts which must be effectively organized, managed, and accounted for -- and in large part under conditions that have significant but limited parallels with commercial methods.

Basic Requirements

The problem of management requires consideration not only of the system, but of the organization and the people that are involved. Any system to be effective must be understandable and useful to person who may not be skilled professional accountants, but who may be outstanding field or troop commanders, aviators, navigators, gunnery officers and supply officers. Except at the Secretarial level, command and management responsibility in the Department of Defense is largely assigned to military personnel. Fundamentally, military men in the command structure are expected to emphasize military aspects of their jobs. Therefore it can be expected that the military man will do the job on the basis of what he is expected to do. To carry out this basic objective it is not unreasonable to expect responsible military personnel to desire sufficient manpower and material at any place and at any time to minimize potential military risk. Cost can assume a secondary role.

The system of financial management should not only be useful to command but should also provide assurance that limited resources will be utilized most effectively in terms of national policy. A major problem is that of attaining harmonious balance between the normal commercial concept of management with profit incentives and emphasis upon efficiency and economy on the one hand, and the military concept of logistic adequacy, on the other.

Some of the basic requirements for an effective system of financial management of the Department of the Defense may be summarized:

1. Single integrated system that deals effectively with all the varied classes of activities.
2. Directly related to the management structure.
3. Reflect the needs of and be useful to command or management.
4. Be the mechanism for full coordination between programming, budgeting, and financial control.
5. Insure that budgeting, funding, accounting and reporting are in accordance with the legal appropriation and fund structure.
6. Be effective yet flexible.
7. Be simple and understandable.

These requirements are not original and have been listed among the recommendations of many studies of the problem of financial management in the Department of Defense. Basically these are the requirements outlined in Title IV of the National Security Act.²¹ This legislation identified the above mentioned functions as basic to financial management and established specific approaches for their development and application. It also established a pattern for the military departments and for the Department of Defense as a whole to effect supervision over the field of financial management, and to establish consistency and uniformity in such matters throughout the Department of Defense. Comprehensive comptroller organizations have been established in all three military departments and for the Department as a whole. Budgeting has been largely transformed to the performance pattern and there has been extensive revision of the appropriation structure.

²¹Public Law 216, 81st Congress, 1950.

Although it is recognized that some progress has been made, the rate has been slow. Much remains to be done. The interpretation of the requirements by the individual services has been too liberal. An effective, simplified and standardized fiscal and reporting system in the entire Department of Defense is required. To do this it is essential that a spirit of mutual confidence prevail among all the management groups at every level, and that the office of the Secretary of Defense and the military departments be in full cooperative effort. This can be accomplished, but the motivation for the effort must come from the office of the Secretary of Defense. Parochial thinking within the three services can and has prevented full cooperation. Congress has often indicated dissatisfaction with the rate of progress and continued displeasure can only lead to further reorganization and finally a single service. The will to get the job done is more important than stalling because of the technical problems involved. The technical problems are numerous and difficult, but they can be solved if there is full cooperative effort.

The theory has been advanced that the computer holds the key to improved management. This theory is met with suspicion by many budget people mainly because they owe their position to the system they are presently administering. One can hardly expect them to cooperate wholeheartedly with a new method that might abolish their jobs. Many military men are also adamant concerning the use of computers as aids in making decisions. Strangely enough these same men were willing to trust their lives to computers in ships, planes, and tanks. It is also paradoxical that the military contributed the "war games" to industry where today young executives are playing "business games" for training in decision making. Still another field where the military have contributed considerably and are still predominant for

military application is Operations Research. Industry is using techniques that could be applied to military management problems as well.

The efforts of management scientists and operations analysts to pretest new plans and decisions by analytic and experimental techniques are still far from maturity.²² Enough progress has been made, however, to justify management scrutiny of these approaches in its planning and decision making.

Areas which are receiving more emphasis than others in top management's long-range planning:

1. Changes in production equipment and distribution facilities.
2. Changes in allocation of company resources.
3. Changes in products by development and diversification.

Operations research approaches have been helping industry management to evaluate the quality of planning. Operations research utilizes the techniques of mathematics, statistics, economics and other disciplines to help solve operating problems and determine business policy. It seeks to improve decision making by setting forth the implications of alternative decisions, by eliminating the less desirable ones, and by predicting the consequences of the remaining alternatives. It provides quantitative information for the exercise of enlightened management judgment.

The impact of operations research is spreading in industry. In an American Management Association survey, 51% of 631 companies replying to a questionnaire reported that they were using operations research in 1957. But virtually none of them used it in 1951, and only 13% of them used it in 1953.

Although the electronic computer has quantitative limits and can make no computations that cannot be made with pencil and paper, its data-processing

²²William J. Platt and N. Robert Maines, "Pretest Your Long-Range Plans," Harvard Business Review (January-February, 1959), 119.

and calculating capability will allow the management scientist to conduct analyses and experimentation which would be entirely impractical with manual methods. The enormous advantage a computer confers is speed. With this advantage, more complicated models of real problems can be analyzed for purposes of finding the best decision policy with respect to a given statement about the environment.

Three techniques are presently being used by the management scientist to pretest company plans:

1. Current operational models of production and distribution systems, useful in experimenting with the effects of particular decision rules under a wide variety of assumptions as to the business environment and yielding conclusions which are applicable to long-range plans.
2. The business game, for testing useful strategies in allocations of resources under competitive conditions.
3. Ecological models of the sales of a company's future products (or services), appropriate to the planning of market strategy and product development strategy.

The major contribution that the business game approach makes to long-range company planning lies in its ability to combine the strengths of man and of computer in experimenting with alternative strategies. The human players can test their plans and their judgment in an environment of conflict, while the computer can quickly assess the effects of decisions in terms of known relationships among the components of a business and of the market. The computer can even introduce random elements into calculating these effects, thus adding to the uncertainty already present by reason of human competition.

The "ecological model" is especially applicable to the military. For example -- the projected long-term air defense of the United States must consider, among other factors, weapon systems already under development by our military, the probability of successful production, the timing of initial production costs, and the effectiveness of defense against enemy weapons (which are expected to increase progressively in capability for destruction). Each new weapons system in turn will be expected to attain predominance in our air defense system, then be supplanted by another more advanced and more effective weapon.

In military planning there has long been some tendency to evaluate a weapon system outside its true environment. An illustration of this error would be a study showing that an air defense weapon available in quantity in 1960 appears to be very effective against a bomber that has been available since 1954. The same weapon may appear superior to another air defense weapon available in 1958. The realities of the situation, however, require that contemporary defense weapons be compared in effectiveness and cost against a contemporary threat.

If the time dimension is treated explicitly and carefully, significantly more realistic results are obtained than if it is treated casually. The pace of military technology is now so rapid that availability of weapons must be measured with the same care that is given to measuring performance.

The translation of the business game and current operational models in commercial product planning to weapons planning and succession is readily apparent. The military problem with its accelerating technology dictates an

explicit treatment of the time dimension and the changing military environment just as commercial product planning requires explicit treatment of the phasing of product development, production, and marketing against the competitive conditions expected to be contemporary with merchandising the product.

CHAPTER V

Conclusions and Recommendations: The Solution

"Nothing will ever be attempted if all possible objections must be first overcome."

Samuel Johnson

Conclusions

1. The present military budget process is not serving top management effectively. Top military management as herein conceived consists of the Secretary of Defense and the Joint Chiefs of Staff. The present system is impeding effective policy and purpose determination. The Secretary of Defense and the JCS are slaves to a budgetary process that is basically designed to facilitate internal programming, management and control rather than for the development, appraisal, and authorization of future policies and programs at top levels.
2. The present budget with a fixed-dollar limitation has resulted in inter-service rivalry and parochial thinking rather than creating an atmosphere of belonging to a "single-service", the Department of Defense. Consequently top level decisions on defense policy are often biased compromises rather than the best for the country regardless of service affiliation.
3. The long time cycle of the present system requires decisions on budget estimates necessary for a period $1\frac{1}{2}$ years in the future.

4. The technical details of the present process require technical people, such as accountants and comptrollers, to make decisions rather than those persons qualified and responsible for broad policy and program planning.

5. Computers are being widely used in the Defense Department in many facets of the budgetary processes. However, their use is largely haphazard with little or no overall supervision from top management. The real potential of computers is being neglected because of lack of top management to investigate this potential. Investigation has been delegated to committees with little concept of what has been done by other services or in industry. The result has been mere mechanization of existing routines rather than an effort to provide a centralized system. The argument most often advanced is that the Department of Defense has multiple services, each doing things differently because requirements and purposes of each differ, therefore centralization is impossible.

6. The use of computers and operations research techniques in the area of high level policy-making is viewed with suspicion by many high-ranking officers. Industry has taken these military tools and used them successfully in business while military leaders reject them despite the fact that military decisions in the operation of ships and planes has long been based on the use of computers.

Recommendations

1. A budgetary system that uses two budgets should be adopted. Although this concept is not original, the application of the system is believed to be novel. Mosher has outlined in his book a two budget system that requires a performance budget and an administrative budget.²³ The Advisory Committee on Fiscal Organization and Procedures recommended a Congressional budget and an operating budget.²⁴ Essentially the program budget is for the development, the appraisal, and the authorization of future policies and programs at top levels, and the administrative or operating budget is for management and control. The program budget is designed to furnish the most meaningful information for top administrative review. Actually the present performance budget is an administrative budget and provides the financial management and control required.

2. Planning and program budgeting should be done by the people most qualified and responsible for broad policy and program planning. Therefore, the comptrollers should be utilized in a staff capacity to provide necessary assistance but the actual preparation and justification of the program budget should be done by the appropriate planning personnel of the services and the unified commanders.

3. The program budgets of the three services should be developed into the Defense Department program budget by the Joint Chiefs on the basis of full requirements of the Joint Strategic Objectives Plan. Higher review

²³Mosher, op. cit., p. 237.

²⁴U. S. Department of Defense, Financial Management in the Department of Defense, November, 1954, p. 12.

authorities and the citizens of the United States, when security permits, should know the amount of funds required to carry out the missions of the Department of Defense regardless of fiscal considerations. A basic argument against the full requirements budget is the tremendous amount of time and effort expended to develop it. However, techniques are presently available to pretest any number of alternative plans with almost unlimited variables. The astounding progress in the use of electronic computers permits rapid computation of estimates. This type of computation is relatively simple compared to some of the complex mathematical models presently being programmed into computers. This method of budgeting would require statistical, rather than accounting skills and techniques since the cost factors would apply not to detailed, specific operations but to basic broad objectives. Cost accounting data would be available in detail from the operating or performance budget in effect during the current fiscal year.

4. The formulation of the Defense program budget would commence approximately one year prior to the fiscal year in which the appropriations would be authorized and be integrated into the President's Budget during March and April. Congressional review would take place during May and June culminating in appropriation legislation by 1 July. This system would require an amendment to the Budget and Accounting Act of 1921 which requires submission of the Budget within the first fifteen days of the regular session.

5. The performance or operating budget would be basically the same as the present budget process, but it would occur one year later and it would still permit a full three months for internal estimating and review. Unlike the present budget, it would start after the President's budget was known, and

it would be based upon firmer program objectives and a reasonably clear knowledge of the funds that would be available.

6. The development of the operating budget should be based on a single integrated system throughout the Department of Defense. A standard classification of functions, service-wide, similar to that now used in the Army Ordnance Corps, would constitute the base classes for budgeting and work planning purposes. This classification would provide the reference for work measurement, costing, and manpower and equipment allocation. The use of a standard classification of functions would make possible meaningful comparisons among like activities as well as provide development of work and cost standards.

7. The Secretary of Defense should take immediate steps to adopt a single uniform structure. The Ordnance Command Management System is by far the farthest advance in this area and could be adapted to the entire Defense Department.

8. Active top management participation is necessary if the full potential of computers is to be utilized in the recommended system. The writer believes that the importance of the computer to top military management warrants a full-time committee consisting of the Under Secretary (as chairman) and top ranking military and civilian executives of the Department. An alternative is to hire the services of a top-flight consulting organization such as that used by the Polaris program. Under no circumstances should the study of this important field be left to a committee whose members already have full-time commitments. There are many outstanding personnel within the Department of Defense who are extremely knowledgeable in the field of management by

computer. This wealth of knowledge has never been brought together in order to solve a mutual problem. Said one top Pentagon official:

When the men running the show work in harness, in a joint effort, some of the things they accomplish are amazing. When they are at odds and inflexibly advocate a different school solution to a mutual problem, too often their efforts cancel each other out -- the progress is nil.²⁵

Epilogue

The writer has left many arguments unanswered: there are far too many objections to overcome. But budgeting is a dynamic field and vast changes have taken place in the past, and the hope is for more improvement in the future. Financial management is now an accepted part of the operations of the Department of Defense and has provided greater economy and efficiency in the area of budget execution.

The advent of the computer age can lead to the integration of planning, programming, and budgeting. The prospect is a challenging one and must be accepted by "all hands" of the Army, Navy, and Air Force if the philosophy of "A Department of Defense" is to prevail over parochialism.

This is not a plea for a "single service" but rather a plea for an attitude of a family unity. Brothers within a family are still individuals, but while they maintain separate characters, their family tie is stronger than their individuality.

Unless this philosophy be nurtured and grow strong, continued dissention among the services will arouse the Congress to legislate cooperation. The name may change but the people will be the same.

²⁵C. W. Borklund, "Editorial," Armed Forces Management, VI (1959), 9.

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